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Phaeomonilia aquatica sp. nov., an aquatic hyphomycete from China

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Abstract—A new aquatic hyphomycete, *Phaeomonilia aquatica*, is described and illustrated from specimens collected on submerged wood in Jiangxi Province, China. *Phaeomonilia aquatica* is morphologically characterized by conidiophores with percurrent proliferation and aseptate smooth conidia that are spherical, subtriangular, subglobose, ellipsoidal to subfusiform or obovate and formed in branched acropetal chains. A key to *Phaeomonilia* species is provided.

Key words — anamorphic fungi, freshwater fungi, lignicolous fungi, taxonomy

Introduction

Hyphomycetous fungi are highly diverse in freshwater habitats (Hu et al. 2013). As essential components in aquatic ecosystems, they play an irreplaceable role in the natural cycle of organic materials and energy. Their global distribution is poorly studied (Shearer et al. 2007), but our group has investigated the distribution of aquatic hyphomycetes for about ten years (Hu et al. 2007, 2010a,b, 2012a,b,c, 2013; Huang et al. 2016). The ongoing investigation in Jiangxi Province, China, has led to the collection of a new species of *Phaeomonilia* R.F. Castañeda et al.

Materials & methods

Unidentified wood samples submerged in a freshwater stream were collected in Jiangxi Province, China, and incubated in moist chambers at room temperature (ca. 25

°C). Samples were examined for fungal fruiting bodies using a dissecting microscope. Observations and photographs were prepared from materials mounted in water and examined with a Nikon Ni compound microscope (Hu et al. 2012a). The specimens examined were deposited in the Herbarium of Fungi, Jiangxi Agricultural University, Nanchang, China (HFJAU).

Taxonomy

Phaeomonilia aquatica J.E. Huang, H.Y. Song, Jian Ma & D.M. Hu, **sp. nov.** Pl1

MycoBank MB 821142

Differs from *Phaeomonilia guangxiensis* by its conidiophores with percurrent proliferations through the apex and by its narrower conidia, and from *P. nanningensis* by its conidiophores with percurrent proliferations through the apex and by its shorter hyaline to yellowish conidia.

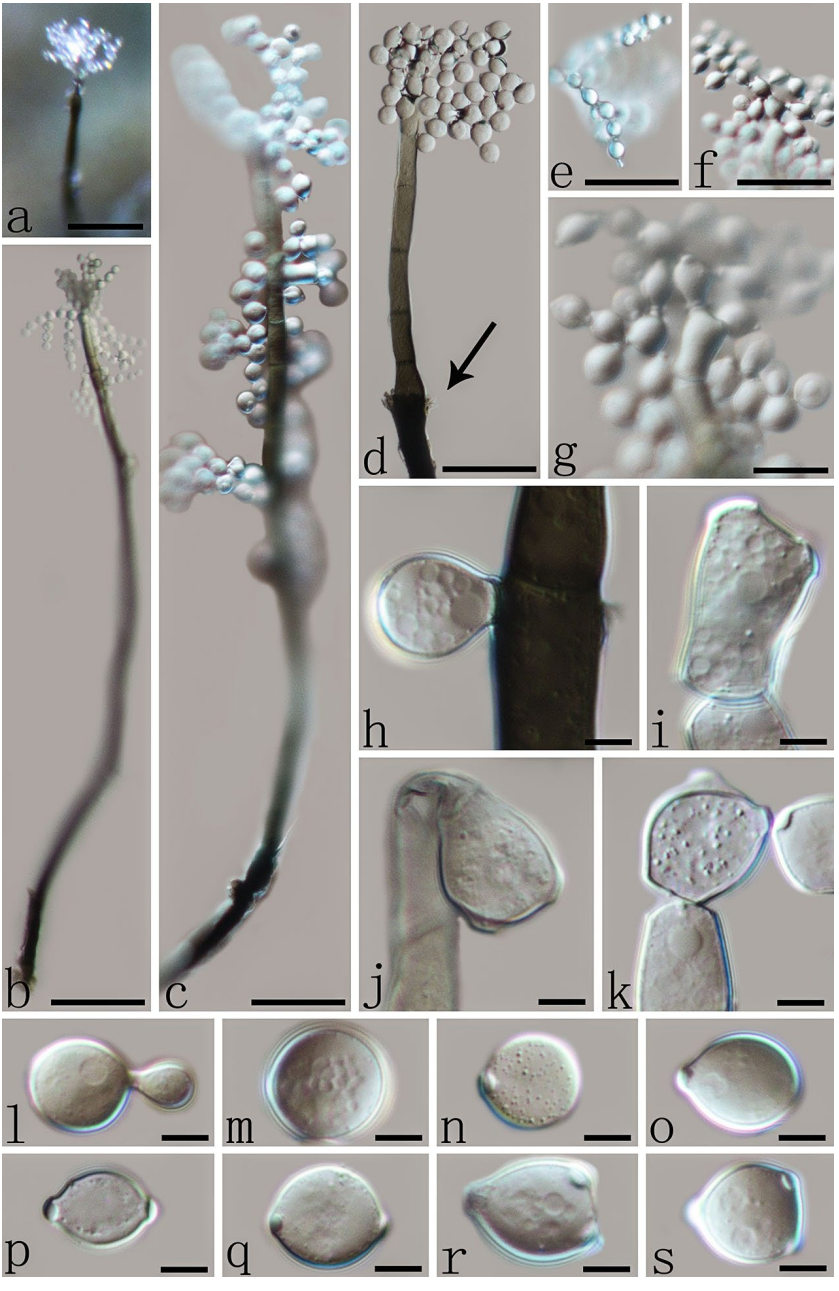
Type—China, Jiangxi Province, Jiujiang, Lushan Mountain, in a stream on submerged wood, 13 Oct. 2016, J.E. Huang (**Holotype**, HFJAU 0148).

Etymology—*aquatica*, referring to the aquatic habitat of the fungus.

Colonies on submerged wood effuse, brown to dark brown, consisting of scattered single conidiophores over the substrate surface. Mycelium immersed or superficial, composed of brown, cylindrical, septate, infrequently branched hyphae. Conidiophores macronematous, mononematous, sometimes more than 900 μm long and 8.5–18 μm diam., single, erect, straight or flexuous, branched or unbranched, smooth, occasionally rough, 15–35-septate, thin-walled, brown to dark brown toward the base, fading slightly toward the apex, with percurrent proliferations through the apex, giving rise to new conidiogenous loci at the apex. Conidiogenous cells holothallic, 12–29 × 8.5–13 μm, terminal, subapical or lateral, obovoid, cupulate or obtrapezoid, smooth, pale brown, with several pale brown to hyaline trapezoid denticles, 3.0–5.9 × 0.9–2.3 μm. Conidia thallic-arthric, 1-celled, 8–14 × 7.5–12 μm, spherical, subtriangular, subglobose, ellipsoidal to subfusiform or obovate, hyaline to yellowish, in branched acropetal chains of about seven conidia, thin-walled, with some small wart on the surface. Conidial secession schizolytic.

Additional specimen examined—**China**, **Jiangxi Province**, Jiujiang, Lushan Mountain, in a stream on submerged wood, 13 Oct. 2016, J.-E. Huang (HFJAU 0323).

Plate 1. *Phaeomonilia aquatica* (holotype, HFJAU 0148). a. Conidiophore and conidia on submerged wood; b–d. Conidiophores and conidia. Note the proliferation (arrowed in d); e–f. Conidial chains; g. Conidiogenous cell with conidia; h–k. Conidiogenous cells; l–s. Conidia. Scale bars: a, b = 100 μm; c–f = 50 μm; g = 20 μm; h–s = 5 μm.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Discussion

Castañeda-Ruíz et al. (2007) erected *Phaeomonilia* for two species, *P. pleiomorpha* R.F. Castañeda et al. (type species) and *P. corticola* (R.F. Castañeda) R.F. Castañeda et al. [≡ *Monilia corticola* R.F. Castañeda]. They compared *Phaeomonilia* morphologically with similar genera, including *Botryomonilia* Goos & Piroz., *Staheliella* Emden, and *Oidiodendron* Robak. Subsequently, Ma et al. (2015) and Yang et al. (2016) described *P. guangxiensis* Y.R. Ma & X.G. Zhang and *P. nanningensis* C.L. Yang & X.G. Zhang from China. *Phaeomonilia pleiomorpha* was collected from a palm petiole submerged in a stream, but the other three species were collected from decaying petioles, twigs, or stems in terrestrial habitats. *Phaeomonilia aquatica* is the second species reported from freshwater habitats.

Phaeomonilia aquatica can be easily distinguished from the other species of *Phaeomonilia* by its percurrently proliferating conidiophores. In addition, *P. pleiomorpha* differs from *P. aquatica* by its smaller, globose, broadly Y-shaped conidia (4.0–5.8 × 3.9–4.4 µm) and its *Stylaspergillus*-like synanamorph (Castañeda-Ruíz et al. 2007); *P. guangxiensis* differs by its slightly shorter and wider, colorless, ellipsoid to globose, broadly Y-shaped conidia (7–11 × 11–14.5 µm; Ma et al. 2015); *P. nanningensis* differs by its longer and slightly wider, brown to pale brown conidia (13.5–25 × 9–13 µm; Yang et al. 2016); and *P. corticola* differs by its narrower, doliiform or ellipsoid conidia (5.5–16 × 4–5 µm; Castañeda-Ruíz et al. 2007). A key to *Phaeomonilia* species is presented below.

Key to species of *Phaeomonilia*

1. *Stylaspergillus*-like synanamorph present ..... *P. pleiomorpha*
1. No *Stylaspergillus*-like synanamorph 2
2. Conidia doliiform or ellipsoid, 5.5–16 × 4–5 µm ..... *P. corticola*
2. Conidia not doliiform, >7.5 µm diam. 3
3. Conidiophores with percurrent proliferation; conidia spherical, subtriangular, subglobose, ellipsoidal to subfusiform, or obovate..... *P. aquatica*
3. Conidiophores without percurrent proliferation; conidia ellipsoidal, globose, or Y-shaped 4
4. Conidia hyaline, 7–11 × 11–14.5 µm .....*P. guangxiensis*
4. Conidia brown to pale brown, 13.5–25 × 9–13 µm .....*P. nanningensis*

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